REMARKS

This amendment is responsive to the Office Action mailed February 20, 2003. Claims 1-30 were previously pending. Claims 1-30 have been canceled. Claims 31-96 have been added by the above amendments. Claims 31-96 are now pending in this application.

Withdrawal of the rejection and reconsideration with an eye toward allowance is respectfully requested. A marked-up version of paragraphs amended as above is attached herein, entitled **Version with Markings to Show Changes Made**.

New Claims

Claims 31-96 have been added by the above amendments. Claims 31, 64, 65 and 66 are independent claims. The applicant believes that no new material is being added by these claims. Applicant respectfully requests examination and consideration in view of the arguments set forth fully below.

Claim Objections

The Examiner objected to an informality in the canceled Claim 2. New Claim 35 includes all of the limitations of Claim 2. The informality of "The method of claim1," has been corrected in Claim 35 with --The method of claim 31,--.

Rejections Under 35 U.S.C. § 103

Claims 1-3, 5-8, 11-26 and 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,389,428 to Rigault et al. (hereinafter Rigault) in view of U.S. Patent No. 6,453,246 to Agrafiotis et al. (hereinafter Agrafiotis). The applicant respectfully traverses the rejection by demonstrating below that Rigault in view of Agrafiotis do not anticipate the applicant's invention.

Rigault teaches a computer system that stores biomolecular data in a database in a memory. Rigault uses a search algorithm such as Basic Alignment Search Tool (BLAST) to compare a sequence of nucleotides with all sequences in a given database. BLAST looks for similarity matches, or 'hits', that indicate the potential identity and function of the gene. Thus, Rigault teaches a data analysis technique, in which some operation is performed on a large number of datasets (e.g. DNA sequences) in order to highlight the similarities and differences between the datasets.

Agrafiotis teaches a system, method and computer program product for representing precise or imprecise measurements of similarity/dissimilarity (relationships) between objects as distances between points in a multi-dimensional space that represents the objects. Thus, Agrafiotis teaches a self-organizing map, a data analysis technique.

The present invention, on the other hand, provides a modeling technique used for data analysis. Datasets (target strings) are first modeled, and the geometry of these models (comparison strings) on the surface upon which they reside and the structure of the models themselves can then be used to highlight and/or visualize patterns within the comparison strings, as well as between comparison strings. The modeling technique is performed by generating a comparison string calculated from a point in a map. Preferably this point is a point in any set of points that can serve as the domain of an iterative function. Further, preferably this set of points is in the complex plane corresponding to an area in and around the Mandelbrot Set. A plurality of target strings comprising datasets, such as DNA sequences, are then compared to the generated comparison string. The comparison string is not one of the target strings. As a result of the comparison, if the score or some other property corresponding to the point meets some relevant criteria, such as some minimum degree of similarity to the target string, a mark is placed on the point in the visual display. Marked points can then be used to highlight and/or visualize similarities or differences between the target strings.

New Claims 31, 32, 39, 40 and 51 correspond to the canceled Claim 1.

Claim 31 is an independent claim. Claim 31 requires generating from a point in the map a comparison string comprising a dataset. The Examiner states that Rigault does not explicitly indicate that the comparison string is calculated from a point in any set of points. The Examiner suggests that

Agrafiotis discloses set of point (col. 11, lines 26-28) and computing the point/coordinating of an object (col. 10, lines 38-44). The applicant respectfully disagrees that this is the same as some of the requirements of Claim 32. Agrafiotis teaches a method of representing objects (datasets) as points in a multidimensional space. (col. 3, lines 36-37). Agrafiotis teaches representing the objects as points on a display map by using Principal Component Analysis to compute the initial configuration of the points on the display map (col. 10, lines 41-42). Claim 31 instead requires generating from a point in the map a comparison string, where this comparison string is then compared to target strings. (Specification, page 3, line 33, page 4, lines 1-2). Neither Rigault nor Agrafiotis teaches generating from a point in the map a comparison string comprising a dataset.

Regarding Claim 31, Claim 31 also requires comparing a number of the target strings with the comparison string to determine for each target string if a mark should be placed on the point in the map corresponding to the comparison string. The Examiner suggests that Rigault teaches comparing all sequences in an internal database. (col. 12, lines 48-49). The applicant respectfully disagrees that this is the same as some of the requirements of Claim 31. As discussed above, Rigault teaches a search algorithm such as BLAST to compare a sequence of nucleotides with all sequences in a given database. (col. 1, lines 57-58). The sequence of nucleotides is not generated. Rigault does not generate a comparison string. Claim 31 instead requires comparing a target string to a generated comparison string. "A region R is selected that can serve as the domain of an iterative function. The iterative algorithm calculates the comparison string from a point p in some region R. Preferably, the region R is in the complex plane corresponding to the area in and around the Mandelbrot Set." (Specification, page 3, line 33 and page 4, lines 1-3). Claim 31 does not compare target strings to target strings. Rigault does not teach comparing a number of the target strings with the comparison string to determine for each target string if a mark should be placed on the point in the map corresponding to the comparison string.

Claim 31 also requires repeating the steps of generating and comparing for a plurality of comparison strings. The Examiner suggests that Rigault teaches these elements of Claim 31. The applicant respectfully disagrees. Rigault teaches a table of entity descriptions, which are used in database storage. (col. 18, lines 1-67). Rigault does not teach repeating the steps of generating and

comparing for a plurality of comparison strings, as required by Claim 31.

Rigault and Agrafiotis do not teach generating from a point in the map a comparison string comprising a dataset. Further, Rigault does not teach comparing a number of the target strings with the comparison string. Further, Rigault does not teach repeating the steps of generating and comparing for a plurality of comparison strings, as required by Claim 31. For at least these reasons, the independent Claim 31 is allowable over the teachings of Rigault and Agrafiotis.

Claim 39 is dependent on the independent Claim 31. New Claim 39 corresponds to the scoring step of Claim 1. Claim 39 requires that the step of comparing comprises scoring of the comparison string by evaluating a function having the comparison string and one of the number of the target strings as inputs, such that the evaluation may be repeated for other of the number of the target strings. The Examiner suggests that Rigault teaches these elements of Claim 39. The applicant respectfully disagrees. As discussed above, Rigault teaches comparing a sequence of nucleotides with all sequences in a given database. (col. 1, lines 57-58) Rigault teaches using BLAST to compare query and database sequence pairs using a scoring system. (col. 12, lines 49-52). Because Rigault does not teach a comparison string, Rigault does not teach that the step of comparing comprises scoring of the comparison string by evaluating a function having the comparison string and one of the number of the target strings as inputs, such that the evaluation may be repeated for other of the number of the target strings, as required by Claim 39. For at least this reason, the dependent Claim 39 is allowable over the teachings of Rigault and Agrafiotis.

Claim 32 is dependent on the independent Claim 31. New Claim 32 corresponds to the part of the generating step of the canceled Claim 1. Claim 32 requires that in the step of generating the comparison string the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function. The Examiner states that Rigault does not explicitly indicate that the comparison string is calculated from a point in any set of points. The Examiner suggests that Agrafiotis discloses set of point (col. 11, lines 26-28) and computing the point/coordinating of an object (col. 10, lines 38-44). The applicant respectfully disagrees that this is the same as the elements of Claim 32. As discussed above, Agrafiotis teaches a method of representing objects (datasets) as points in a multidimensional space. (col. 3, lines 36-37). Agrafiotis teaches

representing the objects as points on a display map by using Principal Component Analysis to compute the initial configuration of the points on the display map (col. 10, lines 41-42). Claim 32 instead requires generating a comparison string (dataset) calculated from a point in any set of points that can serve as the domain of an iterative function. (Specification, page 3, line 33 and page 4, lines 1-2). Neither Rigault nor Agrafiotis teach that the step of generating the comparison string comprises using an iterative algorithm, such that the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function, as required by Claim 32. For at least this reason, the dependent Claim 32 is allowable over the teachings of Rigault and Agrafiotis.

Claim 40 is dependent on the dependent Claim 39. New Claim 40 corresponds to the mapping or marking step of canceled Claim 1. Claim 40 requires that scoring of the comparison string comprises placing a mark on the point in the map if the score or some other property corresponding to the point meets some relevant criteria. The Examiner states that Rigault does not explicitly indicate these elements of Claim 40. The Examiner suggests that Agrafiotis teaches utilizing a display attribute such as color to represent similarity/dissimilarity between objects (col. 4, lines 14-16). The applicant respectfully disagrees that this is the same as the elements of Claim 40. The present invention instead requires placing a mark on the point used to generate the comparison string. Further, certain properties of the comparison string might be marked, and examples of properties that might be marked are the mean value of the comparison string or the Shannon entropy. (Specification, page 5, lines 24-26). Because the present invention compares target strings to the comparison string, there is no direct comparison of target strings to target strings resulting in placing a mark on a map. Neither Rigault nor Agrafiotis teach that scoring of the comparison string comprises placing a mark on the point in the map if the score or some other property corresponding to the point meets some relevant criteria, as required by Claim 40. For at least this reason, the dependent Claim 40 is allowable over the teachings of Rigault and Agrafiotis.

Claim 51 is dependent on the independent Claim 31. New Claim 51 corresponds to the examining step of canceled Claim 1. Claim 51 requires an additional step of examining a plurality of subregions of the map with higher resolution. The Examiner states that Rigault does not explicitly indicated these elements of Claim 51. The Examiner suggests that Agrafiotis teaches set of point

(col. 11, lines 26-28) and computing the point/coordinating of an object (col. 10, lies 38-44); and points with color (col. 4, lines 11-1 and col. 9, lines 30-43). The applicant respectfully disagrees that this is the same as examining a plurality of subregions. Neither Rigault nor Agrafiotis teach examining a plurality of subregions of a map with higher resolution. For at least this reason, the dependent Claim 51 is allowable over the teachings of Rigault and Agrafiotis.

Claim 35 is dependent on the independent Claim 31. New Claim 35 includes all of the limitations of canceled Claim 2. Claim 35 requires that the step of generating the comparison string further comprises transforming the numbers of the comparison string to have values within a set of interest. The Examiner suggests that Rigault teaches that providing the comparison string comprises transforming the numbers of the comparison string to have values within a set of interest. The applicant respectfully disagrees. Rigault instead teaches a database having a set of entities, where each entity stores attributes for a plurality of entries, and at least on attribute is stored in an array. (col. 2, lines 48-52). Rigault discloses database storage features. Rigault does not teach transforming numbers of the comparison string to have values within a set of interest, as required by Claim 35. For at least this reason, the dependent Claim 35 is allowable over the teachings of Rigault and Agrafiotis.

Claim 33 is dependent on the independent Claim 31. New Claim 33 includes all of the limitations of canceled Claim 3. Claim 33 requires that the set of points comprises a region of the complex plane. The Examiner states that Rigault does not explicitly indicate wherein the set of points comprises a region in the complex plane. The Examiner suggests that Agrafiotis discloses plane as well as coordinating for points. (col. 1, lines 50-64). The applicant respectfully disagrees that this is the same as the elements of Claim 33. Agrafiotis discloses placing an image onto an m-dimensional display plane, which is the space of all m-dimensional vectors of real numbers, not complex numbers. Agrafiotis does not teach that the set of points comprises a region of the complex plane, as required by Claim 33. For at least this reason, the dependent Claim 33 is allowable over the teachings of Rigault and Agrafiotis.

Claim 36 is dependent on the independent Claim 31. New Claim 36 includes all of the limitations of canceled Claim 5. Claim 36 requires that the step of generating the comparison string

further comprises laying a grid over the points in the map. The Examiner states that Rigault does not explicitly indicate wherein the step of generating the comparison string comprises laying a grid over the set of points; wherein the step of generating the comparison string comprises restarting the step of generating the comparison string if the iteration has become unbounded. The Examiner suggests that Agrafiotis discloses set of point and iteration with unbounded. The applicant respectfully disagrees that this is the same as the elements of Claim 36. Agrafiotis does not teach laying a grid over the points in the map, as required by Claim 36. For at least this reason, the dependent Claim 36 is allowable over the teachings of Rigault and Agrafiotis.

Claim 37 is dependent on the independent Claim 31. New Claim 37 includes all of the limitations of canceled Claim 6. Claim 37 requires that the step of generating the comparison string further comprises restarting the step of generating the comparison string if the iteration has become unbounded. The Examiner states that Rigault does not explicitly indicate wherein the step of generating the comparison string comprises laying a grid over the set of points; wherein the step of generating the comparison string comprises restarting the step of generating the comparison string if the iteration has become unbounded. The Examiner suggests that Agrafiotis discloses "set of point (col. 11, lines 26-28) and iteration with unbounded (col. 6, lines 58-61; also see col. 10, lines 22-35)." The applicant respectfully disagrees that this is the same as the elements of Claim 37. Agrafiotis teaches that relationships between objects are pair-wise relationships or pair-wise similarities/dissimilarities between pairs of objects (datasets). (col. 5, lines 55-57). Agrafiotis teaches that when pair-wise relationship matrices with unbounded certainties (corrupt data), that is when some of the pair-wise relationships are incorrect and bear essentially no relationship to the actual values, they can be removed from subsequent processing. (col. 10, lines 23-31). Agrafiotis teaches removing the relationship between two datasets from subsequent processing. Agrafiotis does not teach that the step generating the comparison string further comprises restarting the step of generating the comparison string if the iteration has become unbounded, as required by Claim 37. For at least this reason, the dependent Claim 37 is allowable over the teachings of Rigault and Agrafiotis.

Claim 38 is dependent on the independent Claim 31. New Claim 38 includes all of the

limitations of canceled Claim 7. Claim 38 requires that the step of generating the comparison string further comprises a comparison string of any length. The Examiner suggests that Rigault teaches wherein the step of generating the comparison string comprises a comparison string of any length. The applicant respectfully disagrees. Rigault teaches that BLAST compares the query and database sequence pairs using a scoring system, and outputs pairs of sequences called High-scoring Segment Pairs (HSP). An HSP has two sequence fragments of arbitrary length. Rigault also teaches clustering cDNA species, each having about 100-500 base pairs, such that much longer cluster sequences are obtained which may encompass a full length gene. A full length gene does not equate to a comparison string (dataset) of any length. Rigault does not teach that the step of generating the comparison string further comprises generating a comparison string of any length, as required by Claim 38. For at least this reason, the dependent Claim 38 is allowable over the teachings of Rigault and Agrafiotis.

Claim 42 is dependent on the independent Claim 31. New Claim 42 includes all of the limitations of canceled Claim 8. Claim 42 requires that scoring of the comparison string further comprises preliminary testing of properties of the comparison string alone as criteria to initiate scoring. The Examiner suggests that Rigault teaches wherein the step of scoring comprises preliminary testing of properties of the comparison string alone as criteria to initiate scoring. The applicant respectfully disagrees. As discussed above, Rigault teaches that BLAST compares the query and database sequence pairs using a scoring system. As discussed above, Rigault compares datasets in a database. Because Rigault does not teach generate a comparison string, which is then compared to target strings, Rigault can not teach preliminary testing of properties of the comparison string alone. Rigault does not teach that scoring of the comparison string further comprises preliminary testing of properties of the comparison string alone as criteria to initiate scoring, as required by Claim 42. For at least this reason, the dependent Claim 42 is allowable over the teachings of Rigault and Agrafiotis.

Claim 45 is dependent on the dependent Claim 39. New Claim 45 includes all of the limitations of canceled Claim 11. Claim 45 requires that scoring of the comparison string further comprises a one-to-one comparison between corresponding numbers in the target string and the

comparison string. The Examiner suggests that Rigault teaches the elements of Claim 45. The applicant respectfully disagrees. As discussed above, Rigault does not teach a comparison string. Thus, Rigault can not teach a one-to-one comparison between target and comparison strings. Rigault does not teach that scoring of the comparison string further comprises a one-to-one comparison between corresponding numbers in the target string and the comparison string, as required by Claim 45. For at least this reason, the dependent Claim 45 is allowable over the teachings of Rigault and Agrafiotis.

Claim 46 is dependent on the dependent Claim 45. New Claim 46 includes all of the limitations of canceled Claim 12. Claim 46 requires that the one-to-one comparison may be between corresponding sequential or non-sequential numbers in the target string and the comparison string. The Examiner suggests that Rigault teaches the elements of Claim 46. The applicant respectfully disagrees. Agrafiotis teaches a BLAST algorithm, which performs a sequential one-to-one comparison between a region of a sequence and a sequence, both of which are the same length. (col. 13, lines 60-62). A calculation is performed of the number of nucleotide matches between the pairs of two sequences (col.13, lines 63-65). Claim 46, however, also requires non-sequential one-to-one comparison between corresponding numbers. Agrafiotis does not teach non-sequential one-to-one comparison between corresponding numbers. Also, as discussed above, Rigault does not teach a comparison string. Thus, Rigault does not teach that the one-to-one comparison may be between corresponding sequential or non-sequential numbers in the target string and the comparison string, as required by Claim 46. For at least this reason, the dependent Claim 46 is allowable over the teachings of Rigault and Agrafiotis.

Claim 47 is dependent on the dependent Claim 39. New Claim 47 includes all of the limitations of canceled Claim 13. Claim 47 requires that scoring of the comparison string further comprises studying the behavior of the scoring function, such as determining the funtion's minima and maxima. The Examiner suggests that Rigault teaches these elements. The applicant respectfully disagrees. Rigault teaches a procedure for storing the minimum value of the clone offset of the O-array in the range table. (col. 9, lines 40-41). Rigault does not teach that scoring of the comparison string further comprises studying the behavior of the scoring function, such as determining the

function's minima and maxima, as required by Claim 47. For at least this reason, the dependent Claim 47 is allowable over the teachings of Rigault and Agrafiotis.

Claim 48 is dependent on the dependent Claim 39. New Claim 48 includes all of the limitations of canceled Claim 14. Claim 48 requires that only the comparison string is used as relevant input to the scoring function. The Examiner suggests that Rigault teaches these elements. The applicant respectfully disagrees. Rigault teaches that BLAST compares the query and database sequence pairs using a scoring system. (col. 12, lines 50-52). Rigault does not teach that only the comparison string is used as relevant input to the scoring function, as required by Claim 48. For at least this reason, the dependent Claim 48 is allowable over the teachings of Rigault and Agrafiotis.

Claim 49 is dependent on the independent Claim 31. New Claim 49 includes all of the limitations of canceled Claim 15. Claim 49 requires that placing a mark on the point in the map comprises storing the coordinates of the point corresponding to the target string or properties of the comparison string in memory, a database or a table. The Examiner suggests that Rigault teaches the elements of Claim 15. The applicant respectfully disagrees. As discussed above, Rigault does not teach a comparison string. Thus, Rigault does not teach the storage of the coordinates of the point from which a comparison string was generated. Similarly, Rigault does not teach the storage of properties of a comparison string. Rigault, therefore, does not teach that the placing a mark on a point in the map comprises storing the coordinates of the point corresponding to the target string or properties of the comparison string in memory, a database or a table, as required by Claim 49. For at least this reason, the dependent Claim 49 is allowable over the teachings of Rigault and Agrafiotis.

Claim 50 is dependent on the independent Claim 31. New Claim 50 includes all of the limitations of canceled Claim 16. Claim 50 requires that placing a mark on a point in the map comprises placing a mark on a point in a video display by changing some graphical property of the corresponding pixel, such as color. The Examiner states that Rigault does not explicitly teach the elements of Claim 16. However, the Examiner suggests that Agrafiotis teaches the elements of Claim 16. The applicant respectfully disagrees. Agrafiotis teaches utilizing a display attribute such as color to represent similarity/dissimilarity between objects (datasets) (col. 4, lines 14-16). The present invention instead requires placing a mark on the point used to generate the comparison string.

Because the present invention compares target strings to the comparison string, there is no direct comparison of target strings to target strings resulting in placing a mark on a map. Agrafiotis does not teach that placing a mark on the point in the map comprises placing a mark on a point in a visual display by changing some graphical property of the corresponding pixel, such as color, as required by Claim 50. For at least this reason, the dependent Claim 50 is allowable over the teachings of Rigault and Agrafiotis.

Claim 55 is dependent on the dependent Claim 51. New Claim 55 includes all of the limitations of canceled Claim 21. Claim 55 requires that the step of examining a subregion further comprises analyzing and/or comparing points of interest by examining, either visually or mathematically, their relative locations and/or absolute locations within the region. The Examiner states that Rigault does not explicitly teach the elements of Claim 55. The Examiner suggests, however, that Agrafiotis teaches the elements of Claim 55. The applicant respectfully disagrees. As discussed above, Agrafiotis displays coordinates of objects, not points from which comparison strings are generated. Agrafiotis does not teach that the step of examining a subregion further comprises analyzing and/or comparing points of interest by examining, either visually or mathematically, their relative locations and/or absolute locations within the region, as required by Claim 55. For at least this reason, the dependent Claim 55 is allowable over the teachings of Rigault and Agrafiotis.

Claim 56 is dependent on the independent Claim 51. New Claim 56 includes all of the limitations of canceled Claim 22. Claim 56 requires that the step of examining a subregion further comprises analyzing and/or comparing points of interest by examining, either visually or mathematically, metrics other than location. The Examiner states that Rigault does not explicitly teach the elements of Claim 56. The Examiner suggests, however, that Agrafiotis teaches the elements of Claim 56. The applicant respectfully disagrees. Agrafiotis displays coordinates of objects, not points from which comparison strings are generated. Agrafiotis does not teach that the points of interest are analyzed and/or compared by examining, either visually or mathematically, metrics other than location, as required by Claim 56. For at least this reason, the dependent Claim 56 is allowable over the teachings of Rigault and Agrafiotis.

Claim 57 is dependent on the dependent Claim 56. New Claim 57 includes all of the limitations of canceled Claim 23. Because Claim 56 is an allowable claim, Claim 57 is also allowable as being dependent on an allowable base claim.

Claim 58 is dependent on the dependent Claim 51. New Claim 58 includes all of the limitations of Claim 24. Claim 58 requires that the step of examining a subregion further comprises repeating the examining step for smaller subregions. The Examiner states that Rigault does not explicitly teach the elements of Claim 58. The Examiner suggests, however, that Agrafiotis teaches the elements of Claim 58. The applicant respectfully disagrees. Agrafiotis teaches utilizing any display attribute to represent similarity/dissimilarity between objects, including but not limited to size. (col. 4, lines 14-16). Display attributes are not the same as the subregions of the present invention. The present invention instead uses "'zooming.' The subregion of R replaces the previous region R in selecting region R. Comparison strings will be generated from the new subregion of R and will be scored against the same set of M target strings originally provided." (Specification, page 8, lines 17-20). Agrafiotis also teaches allowed ranges for a given pair-wise relationship and the current distance of the corresponding images on the display map. If the distance does not fall within the allowed ranges, the images on the display map come closer together or become more distant. (col. 9, lines 29-41). Agrafiotis does not teach that the step of examining a subregion further comprises repeating the examining step for smaller subregions, as required by Claim 58. For at least this reason, the dependent Claim 58 is allowable over the teachings of Rigault and Agrafiotis.

Claim 41 is dependent on the dependent Claim 40. New Claim 41 includes all of the limitations of canceled Claim 17. Claim 41 requires that the criteria comprises the comparison string having the highest score, where the score is based on some similarity measure to the target string. The Examiner suggests that Rigault teaches the elements of Claim 41. The applicant respectfully disagrees. As discussed above, Rigault does not teach a comparison string. Thus, Rigault can not teach a comparison string having a highest score. between target and comparison strings. Rigault does not teach that the criteria comprises the comparison string having the highest score, where the score is based on some similarity measure to the target string, as required by Claim 41. For at least this reason, the dependent Claim 41 is allowable over the teachings of Rigault and Agrafiotis.

Claim 52 is dependent on the dependent Claim 51. New Claim 52 includes all of the limitations of canceled Claim 18. Claim 52 requires that the step of examining a subregion comprises reformatting of the target and/or comparison string in order to improve the precision and resolution of the method. The Examiner suggests that Rigault teaches the elements of Claim 52. The applicant respectfully disagrees. Rigault teaches the storing and building of clone name mapping arrays. This is not the same thing as changing the format of target and/or comparison strings. An example of format change is from real numbers to integers. (Specification, page 8, line 29 to page 9, line 2). Rigault does not teach that the step of examining a subregion comprises reformatting of the target and/or comparison string in order to improve the precision and resolution of the method, as required by Claim52. For at least this reason, the dependent Claim 52 is allowable over the teachings of Rigault and Agrafiotis.

Claim 53 is dependent on the dependent Claim 52. New Claim 53 includes all of the limitations of canceled Claim 19. Claim 53 requires that the step of examining a subregion comprises a reformatting process methodology based on methodologies such as Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods. The Examiner suggests that Rigault teaches the elements of Claim 53. The applicant respectfully disagrees. Rigault does not discuss any of these methods. Further, as discussed above, Rigault does not teach the formatting process. Thus, Rigault does not teach that the step of examining a subregion comprises a reformatting process based on methodologies such as Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods, as required by Claim 53. For at least this reason, the dependent Claim 53 is allowable over the teachings of Rigault and Agrafiotis.

Claim 54 is dependent on the dependent Claim 53. New Claim 54 includes all of the limitations of canceled Claim 20. Claim 54 requires that the reformatting process is automated. The Examiner suggests that Rigault teaches that the reformatting process is automated. The applicant respectfully disagrees. As discussed above, Rigault does not teach the formatting process. Further, Rigault teaches that the system switches between servers if one becomes unavailable. (col. 4, lines 10-11). Switching between systems is not the same thing as the reformatting process. Rigault

teaches the precompiling of sequence information. (col. 1, lines 18-21). Again, this is not the same as a change in format of the comparison and/or target strings of the present invention. Rigault also teaches storing and building clone name map arrays. (col., 60-67). As discussed above, this is not the same as the formatting process. Thus, Rigault does not teach that the reformatting process is automated, as required by Claim 54. For at least this reason, the dependent Claim 54 is allowable over the teachings of Rigault and Agrafiotis.

Claim 59 is dependent on the independent Claim 31. New Claim 59 includes all of the limitations of canceled Claim 25. Because Claim 31 is an allowable claim, Claim 59 is also allowable as being dependent on an allowable base claim.

Claim 60 is dependent on the independent Claim 31. New Claim 60 includes all of the limitations of canceled Claim 26. Claim 60 requires that the uses of the method comprise analyzing datasets consisting of heterogeneous data, such as both gene expression data and clinical (patient) data. The Examiner suggests that Rigault teaches the elements of Claim 60. The applicant respectfully disagrees. Rigault does not discuss analysis of heterogeneous data, only homogeneous data. Thus, Rigault does not teach that the uses of the method comprise analyzing datasets consisting of heterogeneous data, such as both gene expression data and clinical (patient) data, as required by Claim 60. For at least this reason, the dependent Claim 60 is allowable over the teachings of Rigault and Agrafiotis.

Claim 62 is dependent on the independent Claim 31. New Claim 62 includes all of the limitations of canceled Claim 28. Claim 62 requires that the steps may be automated. The Examiner suggests that Rigault teaches that the steps may be automated. The applicant respectfully disagrees. As discussed above, among other things, Rigault does not teach a comparison string. Thus, Rigault could not teach an automated generation of a comparison string. Thus, Rigault does not teach that the steps may be automated, as required by Claim 62. For at least this reason, the dependent Claim 62 is allowable over the teachings of Rigault and Agrafiotis.

Claim 63 is dependent on the independent Claim 31. New Claim 63 includes all of the limitations of canceled Claim 29. Claim 63 requires that separate processes involved in the steps of generating and comparing may be processed simultaneously by a plurality of processors. The

Examiner suggests that Rigault teaches the elements of Claim 63. The applicant respectfully disagrees. As discussed above, Rigault does not teach a comparison string, so can not process the generation of a comparison at the same time as scoring a comparison string. Thus, Rigault does not teach that separate processes involved in the steps of generating and comparing may be processed simultaneously by a plurality of processors, as required by Claim 63. For at least this reason, the dependent Claim 63 is allowable over the teachings of Rigault and Agrafiotis.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,389,428 issued to Rigault et al. (hereinafter Rigault) in view of U.S. Patent No. 6,453,246 issued to Agrafiotis et al. (hereinafter Agrafiotis), and further in view of U.S. Patent No. 5,416,848 issued to Young. The applicant respectfully traverses the rejection by demonstrating below that Rigault in view of Agrafiotis, and further in View of Young do not anticipate the applicant's invention.

Young teaches a method of efficiently ordering certain kinds of color and pattern information on fractal surfaces.

Claim 34 is dependent on the dependent Claim 33. New Claim 34 includes all of the limitations of canceled Claim 4. Claim 34 requires that the set of points further comprises points in and/or near the Mandelbrot Set or a Julia Set. The Examiner states that Rigault in view of Agrafiotis do not explicitly teach the elements of Claim 34. The Examiner suggests that Young teaches the elements of Claim 4. The applicant respectfully disagrees. Young teaches a technique for expressing a Julia set visually on a map, wherein each point of the Julia set is coded as black or white. (col. 4, lines 35-40). Julia Sets are known, so the invention of Young is the coloring of a Julia set. Young makes no mention of using the map, or model, for data analysis. The present invention, on the other hand, provides a modeling technique used for data analysis. An iterative algorithm is used to generate a comparison string from a point in and/or near the Mandelbrot Set or Julia Set. Young does not generate a comparison string. Thus Young, does not teach that the set of points further comprises points in and/or near the Mandelbrot Set or a Julia Set, as required by Claim 34. For at least this reason, the dependent Claim 34 is allowable over the teachings of Rigault in view of Agrafiotis, and further in view of Young.

Claims 9-10 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 6,389,428 issued to Rigault et al. (hereinafter Rigault) in view of U.S. Patent No. 6,453,246 issued to Agrafiotis et al. (hereinafter Agrafiotis), and further in view of U.S. Patent No. 5,838,832 issued to Barnsley. The applicant respectfully traverses the rejection by demonstrating below that Rigault in view of Agrafiotis, and further in view of Barnsley do not anticipate the applicant's invention.

Barnsley teaches a method for representing a data set by selecting a data transformation function and a data masking function. The method is primarily a data compression technique which transforms images to produce new images.

New Claim 43 includes all of the limitations of claim 9. New Claim 44 includes all of the limitations of Claim 10. New Claim 61 includes all of the limitations of Claim 27.

Claim 43 is dependent on the dependent Claim 39. Claim 43 requires that scoring of the comparison string comprises a test of the comparison string using the target string. The Examiner states that Rigault in view of Agrafiotis does not explicitly teach the elements of Claim 43. The Examiner suggests that Barnsley teaches the elements of Claim 43. The applicant respectfully disagrees. Barnsley teaches a data set transformation function, which may act on the data elements of the original data set to generate a new data set. (col. 4, lines 47-51). The system first receives a set of data elements from a source for compression. (col. 12, lines 21-22). Using data transformation and data masking functions, data transform generator generates an attractor for representing the original data set received. (col. 12, lines 25-33) The present invention, on the other hand, does not act on the target strings to generate the comparison string. Further, the present invention does not transform the target strings to generate a new set of target strings. Thus, Barnsley does not teach that scoring of the comparison string comprises a test of the comparison string using the target string, as required by Claim 43. For at least this reason, the dependent Claim 43 is allowable over the teachings of Rigault in view of Agrafiotis, and further in view of Barnsley.

Claim 44 is dependent on the dependent Claim 43. . New Claim 44 includes all of the limitations of Claim 10. Claim 44 requires that not all of the numbers in the comparison string or the target string must be used in the test. The Examiner states that Rigault in view of Agrafiotis does not explicitly teach the elements of Claim 44. The Examiner suggests that Barnsley teaches the

elements of Claim 44. The applicant respectfully disagrees. Barnsley teaches that an attractor is evaluated to determine whether it accurately represents the original data set. (col. 12, lines 38-40). One way to evaluate the attractor is to compute the Hausdorff distance between the original data set and the attractor. (col. 12, lines 40-42). Barnsley uses all of the numbers of the attractor in the distance test. Thus, Barnsley does not teach that not all of the numbers in the comparison string of the target string must be used in the test, as required by Claim 44. For at least this reason, the dependent Claim 44 is allowable over the teachings of Rigault in view of Agrafiotis, and further in view of Barnsley.

Claim 61 is dependent on the independent Claim 31. New Claim 61 includes all of the limitations of Claim 27. Because Claim 31 is an allowable claim, Claim 61 is also allowable as being dependent on an allowable base claim.

CONCLUSION

For the reasons given above, the applicant submits that the claims, as amended, are now in a condition for allowance, and allowance at an early date would be appreciated. A two-month extension of time fee and extra claim fees have been paid for by credit card. Credit card form PTO-2038 has been included with this response. Should the Examiner have any questions or comments, he is encouraged to call the undersigned at (415) 334-2260 to discuss the same so that any outstanding issues can be expeditiously resolved.

Respectfully submitted,

Julie E. Daniels

Date July 21, 2003

Julie E. Daniels
Reg. No. 51,330

I Sandy Shaw, Applicant/Inventor of the Application #09/766,247 "A Method for the Manipulation, Storage, Modeling, Visualization and Quantification of Datasets" appoint Julie E. Daniels to respond to the office action dated May 20, 2003 on my behalf.

Signed Sandy Shaw
Date 7/21/03

If there are any questions or issues with the appointment of Julie E. Daniels please contact myself at 415-572-8126.

Version with Markings to Show Changes Made

Please amend the claims as follows. All pending claims, whether or not amended, are presented below for the Examiner's convenience:

IN THE CLAIMS

1. (Canceled) A method for manipulation, storage, modeling, visualization and quantification of datasets comprising:

providing a plurality of target strings comprising datasets;

generating a comparison string comprising a dataset using an iterative algorithm, such that the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function;

scoring of the comparison string by evaluating a function having the comparison string and one of the plurality of target strings as inputs, such that the evaluation may be repeated for a number of the other plurality of target strings;

mapping or marking the point if the score or some other property corresponding to the point meets some relevant criteria;

repeating the generating, scoring, and mapping or marking for a plurality of comparison strings if desired; and

examining a subregion with higher resolution if points in the subregion are of interest.

2. (Canceled) The method of claim1, wherein the step of providing the comparison string comprises transforming the numbers of the comparison string to have values within a set of interest.

3. (Canceled) The method of claim 1, wherein the set of points comprises a region of the complex plane.

4. (Canceled) The method of claim 3, wherein the set of points further comprises points in and/or near the Mandelbrot Set or a Julia Set.

5. (Canceled) The method of claim 1, wherein the step of generating the comparison string comprises laying a grid over the set of points.

6. (Canceled) The method of claim 1, wherein the step of generating the comparison string comprises restarting the step of generating the comparison string if the iteration has become unbounded.

7. (Canceled) The method of claim 1, wherein the step of generating the comparison string comprises generating a comparison string of any length.

8. (Canceled) The method of claim 1, wherein the step of scoring comprises preliminary testing of properties of the comparison string alone as criteria to initiate scoring.

9. (Canceled) The method of claim 1, wherein the step of scoring comprises some test of the comparison string using the target string.

10. (Canceled) The method of claim 9, wherein not all of the numbers in the comparison string or the target string must be used in the test.

11. (Canceled) The method of claim 1, wherein the step of scoring comprises a one-to- one comparison between corresponding numbers in the target string and the comparison string.

12. (Canceled) The method of claim 11, wherein the one-to-one comparison may be between corresponding sequential or non-sequential numbers in the target string and the comparison string.

13. (Canceled) The method of claim 1, wherein the step of scoring involves studying the behavior of the scoring function, such as determining the function's minima and maxima.

14. (Canceled) The method of claim 13, wherein only the comparison string is used as relevant input to the scoring function.

15. (Canceled) The method of claim 1, wherein the step of mapping or marking comprises storing the coordinates of the point corresponding to the target string or properties of the comparison string in memory, a database or a table.

16. (Canceled) The method of claim 1, wherein the step of mapping or marking comprises marking the point on a visual display by changing some graphical property of the corresponding pixel, such as color.

17. (Canceled) The method of claim 1, wherein the criteria comprises the comparison string having the highest score, where the score is based on some similarity measure to the target string.

18. (Canceled) The method of claim 1, wherein the step of examining the subregion comprises changing the format of the target and/or comparison string in order to improve the precision and resolution of the method.

19. (Canceled) The method of claim 18, wherein the methodology used in the reformatting process is based on methodologies such as Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods.

20. (Canceled) The method of claim 19, wherein the reformatting process is automated.

21. (Canceled) The method of claim 1, wherein the points of interest are analyzed and/or compared by examining, either visually or mathematically, their relative locations and/or absolute locations within the region.

22. (Canceled) The method of claim 1, wherein the points of interest are analyzed and/or compared by examining, either visually or mathematically, metrics other than location.

23. (Canceled) The method of claim 22, wherein the metrics can be represented by graphic properties such as shading.

24. (Canceled) The method of claim 1, wherein the step of examining a subregion further comprises repeating the examining step for smaller subregions.

25. (Canceled) The method of claim 1, wherein the uses for the method comprise analyzing large datasets, such as for DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, and clinical (patient) data.

26. (Canceled) The method of claim 1, wherein the uses of the method comprise analyzing datasets consisting of heterogeneous data, such as both gene expression data and clinical (patient) data.

27. (Canceled) The method of claim 1, wherein the uses for the method comprise data compression.

28. (Canceled) The method of claim 1, wherein the steps may be automated.

29. (Canceled) The method of claim 1, wherein separates processes involved in generating each comparison string, scoring each comparison string, or transforming each comparison string or target string to a value set of interest may be processed simultaneously by a plurality of processors.

30. (Canceled) A method for manipulation, storage, modeling, visualization and quantification of datasets comprising:

providing a plurality of target strings comprising datasets;

generating a comparison string comprising a dataset using an iterative algorithm, such that the comparison string is calculated from a point in a region of the complex plane and the numbers of the comparison string are transformed to have values within a set of interest;

scoring of the comparison string by evaluating a function having the comparison string and one of the plurality of target strings as inputs, such that the evaluation may be repeated for a number of the other plurality of target strings;

mapping or marking the point if the score or some other property corresponding to the point meets some relevant criteria, such that the coordinates of the point corresponding to the target string or properties of the comparison string are stored in memory, a database or a table, or the point is marked on a visual display by changing some graphical property of the corresponding pixel, and wherein the relevant criteria comprises the comparison string having the highest score, where the score is based on some similarity measure to the target string;

repeating the generating, scoring, and mapping or marking for a plurality of comparison strings if desired; and

examining a subregion with higher resolution if points in the subregion are of interest, wherein the points of interest are analyzed and/or compared by examining, either visually or mathematically, their relative locations and/or absolute locations within the region or other metrics representing the graphic properties of the corresponding comparison strings.

31. (New) A method for dataset pattern analysis for one or more target strings, wherein each target string is a dataset and the target strings can be represented by placing marks on points in a map such that patterns within each point or between points are extracted visually or mathematically, the method comprising the following steps:

generating from a point in the map a comparison string comprising a dataset;

comparing a number of the target strings with the comparison string to determine for each target string if a mark should be placed on the point in the map corresponding to the comparison string; and

repeating the steps of generating and comparing for a plurality of comparison strings.

32. (New) The method of claim 31, wherein the step of generating the comparison string comprises using an iterative algorithm, such that the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function.

33. (New) The method of claim 32, wherein the set of points comprises a region of the complex plane.

34. (New) The method of claim 33, wherein the set of points further comprises points in and/or near the Mandelbrot Set or a Julia Set.

35. (New) The method of claim 31 wherein the step of generating the comparison string further comprises transforming the numbers of the comparison string to have values within a set of interest.

36. (New) The method of claim 31, wherein the step of generating the comparison string further comprises laying a grid over the points in the map.

37. (New) The method of claim 31, wherein the step of generating the comparison string further comprises restarting the step of generating the comparison string if the iteration has become unbounded.

38. (New) The method of claim 31, wherein the step of generating the comparison string further comprises generating a comparison string of any length.

39. (New) The method of claim 31, wherein the step of comparing comprises scoring of the comparison string by evaluating a function having the comparison string and one of the number of the target strings as inputs, such that the evaluation may be repeated for other of the number of the target strings.

40. (New) The method of claim 39, wherein scoring of the comparison string comprises placing a mark on the point in the map if the score or some other property corresponding to the point meets some relevant criteria.

41. (New) The method of claim 40, wherein the criteria comprises the comparison string having the highest score, where the score is based on some similarity measure to the target string.

42. (New) The method of claim 39, wherein scoring of the comparison string further comprises preliminary testing of properties of the comparison string alone as criteria to initiate scoring.

43. (New) The method of claim 39, wherein scoring of the comparison string further comprises a test of the comparison string using the target string.

44. (New) The method of claim 43, wherein not all of the numbers in the comparison string or the target string must be used in the test.

45. (New) The method of claim 39, wherein scoring of the comparison string further comprises a one-to-one comparison between corresponding numbers in the target string and the comparison string.

46. (New) The method of claim 45, wherein the one-to-one comparison may be between corresponding sequential or non-sequential numbers in the target string and the comparison string.

47. (New) The method of claim 39, wherein scoring of the comparison string further comprises studying the behavior of the scoring function, such as determining the function's minima and maxima.

48. (New) The method of claim 39, wherein only the comparison string is used as relevant input to the scoring function.

49. (New) The method of claim 31, wherein placing a mark on the point in the map comprises storing the coordinates of the point corresponding to the target string or properties of the comparison string in memory, a database or a table.

50. (New) The method of claim 31, wherein placing a mark on the point in the map comprises placing a mark on a point in a video display by changing some graphical property of the corresponding pixel, such as color.

51. (New) The method of claim 31, further comprising:

examining a plurality of subregions of the map with higher resolution.

52. (New) The method of claim 51, wherein the step of examining a subregion comprises reformatting of the target and/or comparison string in order to improve the precision and resolution of the method.

53. (New) The method of claim 52, wherein the step of examining a subregion comprises a reformatting process methodology based on methodologies such as Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods.

54. (New) The method of claim 53, wherein the reformatting process is automated.

55. (New) The method of claim 51, wherein the step of examining a subregion further comprises analyzing and/or comparing points of interest by examining, either visually or mathematically, their relative locations and/or absolute locations within the region.

56. (New) The method of claim 51, wherein the step of examining a subregion further comprises analyzing and/or comparing points of interest by examining, either visually or mathematically, metrics other than location.

57. (New) The method of claim 56, wherein the metrics can be represented by graphic properties such as shading.

58. (New) The method of claim 51, wherein the step of examining a subregion further comprises repeating the examining step for smaller subregions.

59. (New) The method of claim 31, wherein the uses for the method comprise analyzing large datasets, such as for DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, and clinical (patient) data.

60. (New) The method of claim 31, wherein the uses of the method comprise analyzing datasets consisting of heterogeneous data, such as both gene expression data and clinical (patient) data.

61. (New) The method of claim 31, wherein the uses for the method comprise data compression.

62. (New) The method of claim 31, wherein the steps may be automated.

63. (New) The method of claim 31, wherein separate processes involved in the steps of generating and comparing may be processed simultaneously by a plurality of processors.

64. (New) A method for dataset pattern analysis for one or more target strings, wherein each target string is a dataset and the target strings can be represented by placing marks on points in a map such that patterns within each point or between points are extracted visually or mathematically, the method comprising the following steps:

generating from a point in the map a comparison string comprising a dataset using an iterative algorithm, such that the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function;

comparing a number of the target strings with the comparison string to determine for each target string if a mark should be placed on the point in the map corresponding to the comparison string; and

repeating the steps of generating and comparing for a plurality of comparison strings.

65. (New) A method for dataset pattern analysis for one or more target strings, wherein each target string is a dataset and the target strings can be represented by placing marks on points in a map such that patterns within each point or between points are extracted visually or mathematically, the method comprising the following steps:

generating from a point in the map a comparison string comprising a dataset;

scoring of the comparison string by evaluating a function having the comparison string and one of the target strings as inputs, such that the evaluation may be repeated for a number of the other target strings, to determine for each target string if a mark should be placed on the point in the map corresponding to the comparison string; and

repeating the steps of generating and comparing for a plurality of comparison strings.

66. (New) A system for dataset pattern analysis for one or more target strings, wherein each target string is a dataset and the target strings can be represented by placement of marks on points in a map such that patterns within each point or between points are extracted visually or mathematically, the system comprising the following:

means for generating from a point in the map a comparison string comprising a dataset;

means for comparing a number of the target strings with the comparison string to determine for each target string if a mark should be placed on the point in the map corresponding to the comparison string; and

means for repeating the means for generating and means for comparing for a plurality of comparison strings.

67. (New) The system of claim 66, wherein the means for generating the comparison string comprises means for using an iterative algorithm, such that the comparison string is calculated from a point in any set of points that can serve as the domain of an iterative function.

68. (New) The system of claim 67, wherein the set of points comprises a region of the complex plane.

69. (New) The system of claim 68, wherein the set of points further comprises points in and/or near the Mandelbrot Set or a Julia Set.

70. (New) The system of claim 66 wherein the means for generating the comparison string further comprises means for transforming the numbers of the comparison string to have values within a set of interest.

71. (New) The system of claim 66, wherein the means for generating the comparison string further comprises means for laying a grid over the points in the map.

72. (New) The system of claim 66, wherein the means for generating the comparison string further comprises means for restarting the means for generating the comparison string if the iteration has become unbounded.

73. (New) The system of claim 66, wherein the means for generating the comparison string further comprises means for generating a comparison string of any length.

74. (New) The system of claim 66, wherein the means for comparing comprises means for scoring of the comparison string by evaluating a function having the comparison string and one of the number of the target strings as inputs, such that the evaluation may be repeated for other of the number of the target strings.

75. (New) The system of claim 74, wherein the means for scoring of the comparison string comprises means for placing a mark on the point in the map if the score or some other property corresponding to the point meets some relevant criteria.

76. (New) The system of claim 75, wherein the criteria comprises the comparison string having the highest score, where the score is based on some similarity measure to the target string.

77. (New) The system of claim 74, wherein means for scoring of the comparison string further comprises means for preliminary testing of properties of the comparison string alone as criteria to initiate scoring.

78. (New) The system of claim 74, wherein means for scoring of the comparison string further comprises a test of the comparison string using the target string.

79. (New) The system of claim 78, wherein not all of the numbers in the comparison string or the target string must be used in the test.

80. (New) The system of claim 74, wherein the means for scoring of the comparison string further comprises a one-to-one comparison between corresponding numbers in the target string and the comparison string.

81 (New) The system of claim 80, wherein the one-to-one comparison may be between corresponding sequential or non-sequential numbers in the target string and the comparison string.

82. (New) The system of claim 74, wherein the means for scoring of the comparison string further comprises means for studying the behavior of the scoring function, such as determining the function's minima and maxima.

83. (New) The system of claim 74, wherein only the comparison string is used as relevant input to the scoring function.

84. (New) The system of claim 66, wherein the mark placement on the point in the map comprises means for storing the coordinates of the point corresponding to the target string or properties of the comparison string in memory, a database or a table.

85. (New) The system of claim 66, wherein the mark placement on the point in the map comprises means for placing a mark on a point in a video display by changing some graphical property of the corresponding pixel, such as color.

86. (New) The system of claim 66, further comprising:

means for examining a plurality of subregions of the map with higher resolution.

87. (New) The system of claim 86, wherein the means for examining a subregion comprises means for reformatting of the target and/or comparison string in order to improve the precision and resolution of the system.

88. (New) The system of claim 87, wherein the means for examining a subregion comprises a reformatting process methodology based on methodologies such as Simulated Annealing, Hill Climbing Algorithms, Genetic Algorithms, or Evolutionary Programming Methods.

89. (New) The system of claim 86, wherein the means for examining a subregion further comprises means for analyzing and/or comparing points of interest by examining, either visually or mathematically, their relative locations and/or absolute locations within the region.

90. (New) The system of claim 86, wherein the means for examining a subregion further comprises means for analyzing and/or comparing points of interest by examining, either visually or mathematically, metrics other than location.

91. (New) The system of claim 90, wherein the metrics can be represented by graphic properties such as shading.

92. (New) The system of claim 86, wherein the means for examining a subregion further comprises means for repeating the means for examining for smaller subregions.

93. (New) The system of claim 66, wherein the uses for the system comprise means for analyzing large datasets, such as for DNA sequence data, protein sequence data, gene expression datasets, demographic data, statistical data, and clinical (patient) data.

94. (New) The system of claim 66, wherein the uses of the system comprise means for analyzing datasets consisting of heterogeneous data, such as both gene expression data and clinical (patient) data.

95. (New) The system of claim 66, wherein the uses for the system comprise data compression.

96. (New) The system of claim 66, wherein separate processes involved in the means for generating and means for comparing may be processed simultaneously by a plurality of processors.